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ON NATURE CONSERVANCY -- THE EVOLUTION OF MODERN PHILOSOPHIES [1/]

Helmut Lieth [2/]

The topic of conservation can be highly controversial. Nature conservancy has many facets. Anyone who has ever been involved in a conservation matter knows that, sooner or later, the discussion becomes loaded with emotional reactions, which by no means solve the existing problems but certainly provide interesting stories to be read by people not directly concerned with the matter.

Consider the following questions:

1) Is it worthwhile and is it conservation of nature, when we fight for a local banyan tree or an oak that has to be removed because a new building or highway is planned for the same spot?

2) Isn't it a paradox that we fight for the survival of wild herds of large mammals like elephants, and at the same time encourage their hunting by importing large quantities of ivory carvings?

3) Is it justified that we try to prevent the construction of a new reservoir or an industrial plant that may provide a better living for thousands of men just because a handful of local biologists find a few plants or animals there which they claim are "rare" or "endangered"?

1/ Based on a lecture presented at the May 1967 meeting of the Hawaiian Botanical Society.

2/ Formerly Visiting Professor of Botany, University of Hawaii; currently Associate Professor of Botany, University of North Carolina.

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1) To preserve entire natural habitats if they are of outstanding natural or scenic beauty, or of scientific importance.

2) To preserve bits of habitats if they contain rare or endangered plants or animals.

3) To provide total or partial protection of rare or endangered species regardless of where they live.

4) To protect single specimens because of their uniqueness, e.g. size, age, history or other circumstances.

5) To protect certain natural, near natural or man-made landscapes if they are outstanding for scenic beauty or historic value.

6) To protect conservation experiments.

7) To prevent the importation and dispersal of weeds and pests.

8) To control the installation and maintenance of industrial plants and sewage disposal facilities.

This is an impressive list. We seem to be able to protect practically everything that is rare, endangered, beautiful and necessary.

A few examples may clarify what we can protect by law:

1) Entire habitats are protected in natural parks, as in Switzerland, the United States and Canada. They include usually large pieces of virgin or almost untouched vegetation although the main reason for protection may be an outstanding geological feature rather than the plant and animal life, e.g. Hawaii Volcanoes National Park.

2) Examples of habitat bits are the many peat bogs in the north temperature zone. These contain many rare species because of their special environmental conditions. Other examples are the few remnants of deciduous forest in Europe which are located in Austria, Czechoslovakia, and Poland.

3) Many of the rare and beautiful so-called alpine species are protected. They are often not rare at the moment but might become extinct in no time, if if picking of the attractive flowers were not prohibited. Species without ornamental qualities are usually easier to protect merely by not publicizing their localities.

4) Practically every tree in the temperate zone that has managed to survive for more than 500 years is protected nowadays. In many cases such trees are related to historical events. These specimens are usually declared natural monuments, which is one of the reasons that nature conservancy is linked with the protection of monuments.

5) Landscape protection is another feature of conservancy. Many landscapes are protected because they demonstrate a once-important feature of land use.

This is true for the "Lueneburger Heide" in Germany, a heath type vegetation, which was believed to be a natural vegetation type. When it was protected as such it developed, to the disappointment of the local conservation officers, into a pine-birch forest, because one of the ruling ecological factors, sheep grazing was prohibited. In this case the conservation office decided to hire a flock of sheep to keep the beloved landscape rather than to allow the development of less interesting natural vegetation.

6) Similar things may happen with several other vegetation units that might become protected in the future. The development of some of the sites that have been set aside in the United Kingdom for "experimental conservation" is also insecure. Not many such experiments exist today.

Numbers 7 and 8, if not directly nature conservancy, are certainly very closely related to it. They might in the future become the most important features of nature conservancy.

If we think about the quality of our laws, why do we still have conservation problems? It is probably one of man's inherent properties to behave in such a destructive way! Maybe it is what I earlier called schizophrenic thinking. Let us analyze it. We have to start with the fact that man is part of nature. As such, he must have an impact on his environment. This impact may be destructive or conservant, and in many cases may be both at the same time because he favors one portion of nature and for that same reason destroys another part. If we try to list all the reasons for which men today would either protect or destroy the natural environment or parts of it, the same action may fall under different categories. This of course makes it difficult to classify reasons for conservation or destruction. Nevertheless, an attempt to classify is one means of starting a discussion of any subject and therefore I have compiled various reasons man may find for either protecting or destroying nature. Since the first impact that man had upon his environment was certainly destructive, we will look at destructive influences first.

Reasons for man's destructive actions:

1) Essential for his life

a) Food

i) Hunting animals

ii) Space for his crops

b) Clothing

c) Housing

i) Space for houses

ii) Supply of building materials and firewood

d) Security

i) Clearance of larger areas around houses

ii) Exterminating dangerous or intolerable plants and animals within his sphere of influence.

2) Voluntary along with his various activities

a) Religious and social activities

b) Organization of his communities

c) Hygiene; disease, weed, and pest control

d) Industrial use

e) Scientific experiments

f) Entertainment

g) War actions

3) Accidental or involuntary

a) Application of wrong techniques

b) Transfer of species to other environments

c) Escape of fires

The first part of this list does not need any explanation, but the second part may.

In organizing his communities man builds roads and cities to an increasing degree. This activity is probably the second most destructive influence of man, surpassed only by the industrial use of natural resources.

The steady improvement of hygiene and control of diseases, pests and weeds, while certainly desirable is accompanied by an increasing degree of destruction through the pollution of creeks and streams by detergents and pesticides. This could also be considered as an application of wrong techniques.

Nothing needs to be said about the destructive impact of industry, and the effects of certain scientific experiments are clearly demonstrated by each A-, H- or Co-bomb test, although these are not the only destructive ones.

Man is even able to act in highly destructive ways for his personal enjoyment. Not long ago hundreds of thousands of bison were killed on the great plains, simply for the entertainment of the people doing it. But we need not go that far back. If in our time a movie star appears with the fur coat from a rare animal, she will easily attract enough followers that this could cause the extinction of said animal.

In the same way we listed destructive influences, we can compile the various reasons man may have to preserve his natural environment.

Man's reasons for the protection of nature:

1) Essential for his life

   a) Cultivation of plants

   b) Breeding of animals, domesticated or game, for food or as pets

   c) Conservation of soil

   d) Conservation of water and watersheds

2) Religious values

   a) Tabus, kapus

      i) Sacred places

      ii) Sacred plants or animals

   b) Surroundings of churches, temples or monasteries

   c) Cemeteries and single graves

3) Esthetic values

   a) Enjoyment

   b) Curiosity

   c) Recreation

   d) Memorials of historical events

4) Scientific interests

   a) Maintenance of collections for current and future teaching and research

   b) Samples of various "bio-units" for demonstration and investigation in their given geographic location

   c) Survival of as many species as possible as resources for the future.

This gives in a generalized, and probably idealized, form the present attitude of man towards nature. A comparison of the reasons for destroying and the reasons for protecting nature shows us that the schizophrenic thinking mentioned above is in many cases a contradiction that arises from the circumstances rather than from a split philosophy. This is especially clear if we compare the essential activities that are listed above. Some doubts arise only in the category of voluntary actions

where it seems to be illogical that the same people find reasons for destroying the vegetation here and conserving it there. The director of a big industrial plant may allow the highly poisonous sewage of his factory to be poured constantly into a running creek, where it kills all existing life, and at the same time he might protect the population of deer a few miles away for his own enjoyment, and he might even be the leader of the local conservation association.

Doubtless in most cases it is lack of knowledge that lets people react this way, for men today follow the idea: work is work and play is play. For most of us conservation is play. Parks are for our entertainment. Birds and rare plants are a recreational matter and for that reason only the beautiful ones are of common interest. Every conservationist has to deal with such thinking, and in fact some of them have a philosophy that is not very far from this.

It is not always merely the lack of knowledge that causes our destructive influence upon nature. As civilization has developed, increases in human population have required development and utilization of more and more formerly undisturbed natural areas. At the same time improved technology has allowed man to have an even greater impact on nature. The effect of this impact can be demonstrated by the following example:

Let us assume that men would decide that all trees on earth had to be cut down, and that a joint action to solve this ridiculous problem would be undertaken using all facilities now available. How long would it take to accomplish this task? The estimates below seem reasonable.

1) The total population of the earth amounts to 3×10^9 people

2) One/third would be able to participate 1×10^9 people

3) Each person could cut 10 trees per day 10×10^9 trees/day

4) The total forest area is estimated at 40×10^6 km^2

5) With an average density of 500 trees/hectare there are 2000×10^9 trees to cut

6) Line 6 divided by line 3 = $\frac{2000 \times 10^9}{10 \times 10^9}$ = 200 days

If the same calculations were made for the year 1800, the following estimates could be used.

1) The total population of the earth was 1×10^9 people

2) One/third would be able to participate 0.3×10^9 people

3) Each person could cut 3 trees per day 0.9×10^9 trees/day

4) The total forest area was slightly larger 45×10^6 km^2

5) With an average density of 500 trees/hectare there were 2250×10^9 trees to cut

6) Line 6 divided by line 3 $\frac{2250 \times 10^9}{0.9 \times 10^9}$ about 7 years (2500 days

Thus, if there were no problems of access to forested areas it would have taken some 7 years to cut all the trees on earth. However, the transportation of people to the forests would have taken 10 to 100 times as long as it does today, and the job would have taken more than 100 years.

If we go back to 1650, the larger populations in the more densely populated areas of the earth simply did not have access to the large forest areas, and tree growth could have proceeded at a faster rate than the trees could have been cut down.

When we think scientifically about the need for conservation today we usually can fit the problems into two categories:

1) Maintaining up the production and the balanced-matter cycling in each landscape,

2) Preserving as many existing species of plants and animals as possible.

Many of my colleagues consider that only the second category should be regarded as nature conservancy, and suggested that the first would thereby be accomplished. The other group of scientists believes that the maintenance of the balanced-matter cycle should be the primary concern, and only on that basis should we try to preserve as many species as possible. By observing the present and past struggle between population increase in an area and the attempt to gain enough food for it, as well as the general destructive effects that modern techniques and industry have upon everything that belongs to the biosphere, I feel we must put special emphasis upon this part of conservancy. In this respect conservation must very soon become a concern of all of us. We will have to teach means of conserving the productivity of a landscape not only to biology students but also to future industrial leaders and politicians. Otherwise the world will soon become a very unpleasant place in which to live.

If the maintenance of a healthy landscape becomes a primary objective of the total population, the chances are great that we can preserve many species which under the present population pressures of mankind are simply bound to become extinct. However, it is impossible to preserve all species from extinction. We must realize that extinction is part of the natural evolution of the species. No species will live forever. We can delay but seldom present this type of extinction. On the other hand, we should not allow extinction to be hastened by man's activities.

I believe that we will need as many species as possible for various future studies, the character of which we cannot even foresee now. Who knows today what will be important tomorrow? One of the best examples of this is Drosophila. This little fruit fly was certainly once unimportant or even undesirable in man's scheme of things, but consider the tremendous amount of scientific information we have obtained from this little animal.

Current conservation practices have evolved through experiences with our environment which sometimes date back very far. Man's attitude towards nature has developed rather slowly and through practical experiences. One who looks at the natural environment through the eyes of a scientist can see that we must change our habits rather quickly. Although it might not seem clear today, the productivity aspects of conservation might tomorrow become equally as important as industry.

Degener's Reply to "The Hawaiian Roadside" Editorial

(On September 11, 1967, the Honolulu Star-Bulletin published an article indicating that Dr. Otto Degener had made certain critical statements about the proposed landscaping along the road from Hilo to Hawaii Volcanoes National Park. The following day the Star-Bulletin published an editorial criticizing Dr. Degener for the remarks which they claimed he had made. However, Dr. Degener's original letter was never published, and the statements criticized in the editorial were not made by Dr. Degener but by a reporter who abstracted his letter. Consequently, we print here the full text of the original letter and Dr. Degener's reply to the editorial.
-Editor's Note)

Dear Sirs:

The editorial in the Honolulu Star-Bulletin of Sept. 12 criticizing me is based on a reporter's article in the same paper the day before, purporting certain statements to me. These the reporter garnered in garbled version from my letter of Sept. 4 to the Editor, a letter that has never been published. In short, I disclaim responsibility for the reporter's surprisingly interesting article, and herewith re-request a second time that my original letter be printed. Copies had been mailed to Governor Burns, Senator Fong, Supt. Tobin, local newspapers, and botanical as well as conservation groups. It read as follows:

P.O. Box 154, Volcano, Hawaii 96785
Sept. 4, 1967.

Dear Sirs:

I was interested in the Sept. 1 article appearing in the Honolulu Star-Bulletin entitled "Preservation of Scenery in Volcano Road Project." As resident taxpayer of the Volcano area and professional botanist, I herewith wish to add a few of my own observations and suggestions.

I have traveled and collected plants since 1920 in such tropical and subtropical regions as Bermuda, Florida, the Bahamas, California, Mexico, Guatemala, Fiji and in areas near the Equator during a six months 'round the World tour. These are precisely the places many tourists to our shores have visited. Thanks to the activity of Gardeners and horticulturists throughout the World who have been actively exchanging seeds and cuttings for some hundred years, the tourist to the Hawaiian Islands sees pretty much the same gaudy flowers he has seen before. When you have seen them already in Florida or elsewhere, it is all very nice but a bit monotonous to see this same vegetation all over again in Hawaii. Why cannot visitors to Hawaii see native Hawaiian plants instead?

The scenic strips along each side of the Volcano Road are to be 110 - 150 feet wide. This area presently is a refuge for numerous kinds of native Hawaiian plants, such as treeferns and ohia-lehua trees, intermixed with "damn haole" introductions. Many of these last I include in the following informal list:

Angels trumpet (the deadly poisonous Brugmansia), America; Abutilon, America; Acalypha, South Seas; African tuliptree, Africa; Allamanda, America; Avocado, America Azalea, America, Asia; Bamboo, Asia; Banyan, Asia; Begonia, America, Asia; Bignonia, America, etc.; Bixa, America; Bougainvillea, America; Brassaia, Australia;

Buddleja, America, Asia; Cacti of many kinds, America; Calliandra, America; Carissa, Africa, Asia; Castorbean, Africa; Casuarina, Australia; Century plant, America; Cherimoya, America; Christmasberry & Peppertree, America; Clerodendron, Africa, Asia; Coffee, Africa, Asia; Coleus, Africa; Croton, America; Cryptomeria & other evergreens, Asia, etc.; Cycas, Asia, Australia; Dombeya, Africa; Elderberry (Sambucus), America, Asia, Europe; Eucalyptus, Australia; Fuchsia, America; Gingers, Asia; Gold- & Silverferns, America; Guava of several kinds, America; Hebe, Australia; Holly (Ilex), Northern Hemisphere; Hoya (Waxplant), South Seas; Hydrangea, America, Asia; Ixora, Asia; Jacaranda, America; Jasmine, Asia, etc.; Lagerstroemia (Crapemyrtle), Asia, Australia; Lantana, America; Lycium, Worldwide; Magnolia, America; Melaleuca (Paperbark), Australia; Melastome, Tibouchina, America, etc.; Mirabilis (Four-o'clock), America; Mockorange, Asia; Monstera, America; Norfolk Island Pine, South Seas; Oleander, Asia, Europe; Orchids of many kinds, Tropics; Panax, America, Asia; Passionflowers, America; Pedilanthus (Slipperflower), America; Penciltree, Africa; Philodendron of many kinds, America; Plumbago, Africa; Poinsettia, America; Pomegranate, Asia; Pride-of-Barbados, America; Pride-of-India, Asia; Pyracantha (Firethorn), Asia; Rhododendron, America, Asia; Seagrape (Coccoloba), America; Showertrees of various kinds (Cassia, etc.); Sisal, America; Solandra, America; Stercilia, America, Asia; Strelitzia (Bird of Paradise), Africa; Thimbleberry, Asia; Blackberry, America, Asia; Tamarind, Asia; Tamarix, Asia, Europe; Terminalia, Asia; Thevetia (Yellow oleander), America; Vitex, Asia, Europe.

If we are to make the scenic strips along the Volcano Road properly Hawaiian for residents and for the tourists within our midst, we must guard against the danger of so-called "beautification" consisting of growing any of the above-named exotics and their ilk in this area. It would distinctly change the character of the area from near-authentic Hawaiian to imitation Florida or elsewhere. Waikiki is already too much like Miami for the average tourist; why err similarly with our roadsides?

Our islands are internationally famous for the beauty and scientific importance of their native flowering plants, 98% of which are to be found no other place on earth. The most feasible and practicable method of beautifying our roadsides is to use Federal funds available to engage crews armed with saws, picks, shovels, axes, caneknives and weed sprayers to eradicate the _malihini_ introductions already there. No replanting will be necessary as the native plants have been able to take care of their own distribution without man's help for millions of years. Their spores and seeds will quickly germinate in any void left by the removal of the foreigners. Within a year or two the area will be what it was like in the time of Kamehameha I, with a resulting saving of Federal funds for the financing of similar beautification projects along additional stretches of the Belt Road.

Dr. Otto Degener
Naturalist, Haw. Nat. Park, 1929
Author, Flora Hawaiiensis

Please note I never stated I was "Hawaii National Park botanist since 1929"; I was Naturalist that year, and have not been connected with the National Park Service since that date. I published, however, my popular "Plants Haw. Nat. Park" in 1930, which book is now in a new edition. I advocated encouraging the growth of native plants along a particular scenic strip between Hilo and the Kilauea Volcano area by destruction of competing "damn haole" introductions. Among these are the angels trumpet, which is violently poisonous and has caused the death of children playing with it; the elderberry and _Isotoma_, which are both poisonous to stock; Florida and Himalaya blackberries, which form impenetrable thickets; _Pyracantha_ with cruel thorns;

etc, etc. I definitely did not wish my statement to apply to eradicating exotic ornamentals wholesale from our roadsides, though I do favor paying more attention to our native beauties such as loulu palms; bastard sandalwoods; wiliwili tree, naupaka; alii; Canthium; Kokia: Thurston soapberry: our many native white, red, pink and yellow hibiscus; etc. I am decidedly not a botanical Carrie Nation with my little hatchet chopping down every African tuliptree I see. In fact, on my own properties, among endemics, I cultivate such haole as African tulip; Japanese azalea; Indian banyan; and American Hoya, Monstera or Swiss-cheese-plant, Pedilanthus and seagrape.

Dr. Otto Degener
Author, Naturalist's South-Pacific
Expedition:Fiji
Recipient, Linne Medal, Stockholm, 1962

BOTANICAL SOCIETY NEWSNOTES

Chock Leaves Hawaii: Mr. Alvin K. Chock has accepted a new position as Assistant Inspector in Charge, Plant Quarantine Division, A.R.S., U.S.D.A., 9 Custom House, Baltimore, Maryland 21202. The Chocks have moved into a new home at 12306 Rustic Hill Drive, Bowie, Md. 20717. Mr. Chock has a long record of service of the Hawaiian Botanical Society, as Secretary, Vice-President, and President. He was the founder and first editor of this Newsletter. We are sorry to see him leave Hawaii, but he has our best wishes for success in his new position.

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THE HAWAIIAN BOTANICAL SOCIETY was founded in 1924 to "advance the science of Botany in all its applications, encourage research in Botany in all its phases," and "promote the welfare of its members and to develop the spirit of good fellowship and cooperation among them." "Any person interested in the plant life of the Hawaiian Islands is eligible for membership in this Society."

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